ORDER/INVOICE/FULFILLMENT

Acctg. ONLY

Inv. Comp.	By:	Date:	Client #	Order #	Inv. #	Multi-Invoicing ____ of ____

CUSTOMER/INVOICE TO

ORIGINATOR (Signaure) ____________ DATE ____________

Company Software AG
Name Mr./Ms. ____________
Position ____________
Address ____________
____
City ____________
Province ____________
Phone ____________

CA Tax Rate ____________
CT Tax 8% ____________
Salutation ____________
State ____________
Zip ____________
Country ____________
Fax ____________
Tlx ____________

APPROVALS
TOF
VP Sales/Res.
2/2/90
Date
____
Controller
____
Date

ORDER

Special instructions for invoicing, progress billing, or delayed payments, etc.
Transmitted check to $4,000 only (full payment prof fee)
(Still have to bill expenses)

Contract Year Beg. ____________
End ____________

☐ New Order (N1) ☐ Prior Yr (N3)
☐ Renewal (N2) ☐ Cancel

Invoice Type
☐ Fulfillment Only
☐ W/Order (OR)
☐ Monthly (MO)
☐ Quarterly (QT)
☐ Pending

Employee # Sold by:
________ ___%
________ ___%
________ ___%

Employee # Commission to:
________ ___%
________ ___%
________ ___%

CLIENT AUTH.

PO# ____________ INPUT Contract ☐ Letter ☐ Verbal ☐
Attach all authorizing documents to white (contract) copy.

SHIP TO

Company ____________
Name Mr./Ms. ____________
Position ____________
Address ____________
____
City ____________

Province ____________
Salutation ____________
State ____________
Zip ____________
Country ____________
Phone ____________

ITEM TYPE

- Subscription (SB)
- Custom (YC/ZC/KC)VC
- Multiclient (MC)
- Reports (RP)
- Copies (CP)
- Consult/Present (PR)
- Newsletter (NL)
- Reimbursed Costs (EX)
- Merger/Acq. (ME)
- Exec Overview (EO)
- Conf/Seminar (CN)

DETAIL

Indicate US, UK, FR, VA	Prod. ID/Year	Item Type Code	Item Description or Title	Quantity	Price	Shipped By	Date
US	YSAG	YC	$8,000 prof fee				
			now received				
			(Expenses still to				
			be invoiced - send				
			TOF a copy for				
			approval)				

Fulfillment to be completed in: ☐ Corporate ☐ London ☐ Virginia ☐ France ☐ Other ____________

• White - Contract • Green - Fulfillment • Yellow - Invoice • Pink - Originator • Goldenrod - Sales Manager

M&S180 8/89

INPU

SOFTWARE AG
OF NORTH AMERICA, INC
RESTON INTERNATIONAL CENTER
11190 SUNRISE VALLEY DRIVE
RESTON, VIRGINIA 22091

SIGNET® BANK
WHITESTONE, VA

101 78292

68-589
514

Check Date	PAY THIS AMOUNT
1/31/90	$4,000.00

THE SUM **4000** DOLS **00** CTS

TO THE ORDER OF

THOMAS O'FLAHERTY
C/O INPUT
959 ROUTE 46 EAST, SUITE 201
PARSIPPANY, N.J. 07054

Michael J Sharpe

Two Signatures Required for Checks over $5,000.00

⑈10178292⑈ ⑆051405890⑆ 552⑈7116585⑈

. Pay to order of INPUT

. Th

A Draft Prospectus

CASE 1990-1995:

A Multi-Client Study of the Applications Development Requirements of U.S. Corporations

[Bracketed material = comments which would not be included in a public copy.]

1. THE PROBLEM TO BE ADDRESSED

The use of CASE tools and associated methodologies has significantly risen in the last five years. In large part this has been a result of the maturation of CASE tools and increasingly compelling arguments for the use of CASE.

However, much of the use of CASE seems to be based more on faith than on facts. That is, people want to believe that CASE works, even though hard evidence to back this up is scarce; descriptions of CASE success are usually anecdotal, with few guarantees that lessons learned can be transferred elsewhere. There have been attempts to analyze and quantify CASE benefits, but few of these efforts come from objective sources.

The result is that neither CASE users nor vendors have a good idea exactly where CASE is now -- and even less of an idea where it's going. There is the danger that CASE could join other might-have-beens like artificial intelligence, information centers, and fourth generation languages.

What has been missing -- which this study plans to remedy -- is a fact-based assessment of CASE, founded on direct primary research. The study will establish exactly where CASE is now, what has been accomplished (and why), what barriers and problems exist, and how future progress can be made.

It should be stressed that the information needs of software and service suppliers and IS departments are strikingly similar. For example, both groups have to find answers to a group of key questions if either side is going to make substantial progress. Examples of such shared issues include:

- Why does CASE succeed or fail?
- What lessons can be gained from leading-edge CASE implementations?
- Why do organizations not use CASE?
- What corporate and MIS needs are filled -- and left unfilled -- by CASE?
- Which CASE vendors will prosper, fail -- or merely survive?
- How can CASE improve the IS position within in organization?

2. THE SCOPE OF THE STUDY

The proposed study will focus on unresolved, critical issues which must be understood if CASE is going to continue to progress.

- What are the preconditions for successful CASE implementations?
- Are there factors which virtually guarantee CASE failure?
- Are the concepts of "front-end" and "back-end" CASE obsolete?
- What are the major "before" and "after" differences for an organization which implements CASE?
- What proportion of CASE success is due to CASE tools and what proportion on how tools are put to use?
- Where has CASE added to a firm's competitive advantage? Is this due to unique conditions within such firms or can this be replicated?
- How can CASE (as commonly understood) be effectively linked to business planning?
- What are the risks associated with attempting to use CASE to achieve corporate goals?
- What are the current gaps between corporate CASE needs and vendor offerings? That is,
    - Are the gaps perceived in the same way by prospects, customers, and vendors?
    - Which gaps are the most serious?
    - How near are the gaps to being closed? (From the standpoint of both perception and reality.)
- What will be the impact of new CASE-related technologies now on the horizon (e.g., Object-Oriented-Programming, Object-Oriented-Design, Real Time design applied to MIS projects)?
- How is IBM's CASE strategy changing? How will its strategy -- and execution -- affect current CASE users, future CASE implementors, and CASE vendors?
- How real is AD/Cycle? What impact will it have on customer plans to use CASE and to acquire CASE products. How will AD/Cycle affect the short- and long-term use of competing vendors' products?

- How will the current balance between IS Departments and other corporate departments change? This includes activities such as:
    - Defining requirements
    - Building Systems
    - Maintaining/enhancing systems
- How will the successful use of CASE affect the position of IS operations in a firm? For example,
    - Will there be greater IS involvement in developing corporate plans and objectives?
    - How much will the reality of evolutionary system change be able to help other departments meet their objectives?
    - Will more corporate resources be devoted to systems development and implementation?
    - Will system resources be used more efficiently and effectively?
    - Will there be increased responsiveness in meeting corporate needs?
- What opportunities -- and barriers -- does CASE create for vendors offering non-CASE products and services?
- What will be the size of the total CASE product market from 1990 to 1995?
    - How will this be split between the different classes of CASE products? How much -- and why -- will these proportions change over time?
    - What will be the relative use of CASE by type of customer (e.g., by industry grouping or company size)?
    - What factors will accelerate -- or hold back -- projected CASE use?
- Who decides to purchase CASE products and services now? Who will do so in the future?
- Will the concentration of CASE vendors continue? what direction will mergers and alliances take? Why? Who will be left in three years?
- Should customers be planning to deal with only the "mega-vendors" or will viable specialists remain?

- What level of investment will be required to achieve critical mass as a CASE implementor? How does the investment break down between, for example, various types of tools, specialized staff, internal training, external consulting, etc.?

- Has CASE already changed the composition and proportion of tasks in the systems development cycle? what are the main variables? What further changes lie ahead over the next five years?

- How will CASE affect -- and be affected by -- existing products such as fourth-generation languages, non-relational DBMS, spreadsheets?

- Will future generations of CASE tools and concepts bridge -- or widen -- the gaps between different hardware platforms?

- Will current programming and development aids be absorbed into CASE offerings?

- To what extent will there be a next-generation of application packages built with CASE tools which allow customer customization? Do corporations need -- and are they ready for -- such offerings? How much can be delivered soon? In the future?

- What methods for measuring CASE benefits work? What quantitative and qualitative benefits have been measured? What improvement should be made?

- What has been the experience where CASE product providers also provide CASE implementation or consulting services? What is the future for these types of services?

Note: The scope of this study will be limited to CASE as applied to systems development of business-related systems. Real-time applications aimed at process control, machine control, sensors, and specifically, embedded systems (both defense and non-defense) will be excluded from this particular study. The geographic focus will be the U.S., except to the degree that particular vendors' strategies and products have world-wide implications. Excluded areas of focus may be the subject of follow-on studies, depending on the level of interest.

3. METHODOLOGY

The primary -- and unique -- objective of this study is to gain an in-depth understanding of CASE users' experiences to date and to understand the motivations behind their future plans. Consequently, the research will largely consist of structured interviews with 300 organizations conducted by experienced staff. (A mail survey was considered -- and rejected -- because of the need to probe and understand why.)

The research will be made up of the following components:

- 135 interviews in corporations with a higher-than-average use of CASE
- 75 interviews with low-usage corporations
- Interviews will include IS managers, IS technical managers, end-user department managers, and senior corporate executives
- 40 interviews with consultants and other experts, R&D organizations, researchers, etc.
- 25 in-depth case studies will be prepared showing examples of particular successes, failures, and notable exceptions from "rules" discovered
- 50 vendor interviews

The study team will, of course, conduct an extensive review of the literature, the work of leading CASE theorists, and analyze significant CASE products.

4. BENEFITS

The study will address each of the issues outlined under "Scope" and provide subscribers with a thorough understanding of the dynamics of the CASE environment as well as future directions. The study will not, however, stop at providing information and its analysis. As important as fact-based understanding is, being able to take action on these facts is even more important. The study's recommendations and conclusions will be directed at both CASE vendors and IS management. This will permit both vendors and corporate CASE users to understand how the overall CASE environment will change and give them a head start on making adjustments to their CASE strategies. For many firms, these adjustments may be major ones. Examples of how the study's findings could impact actions are shown below:

Finding (Example)	Typical Actions	
Reason(s) for CASE success/ failure	Corp.:	Change tools, techniques, management practices
	Vendor:	Change training, marketing
System development needs unfilled by CASE	Corp.:	Change products or the way they are used
	Vendor:	Change/add products; add consulting
Analysis of IBM strategy	Corp.:	Decide if IBM has entire CASE solution
	Vendor:	Make sure IBM does not have entire solution
Concentration of CASE vendors	Corp:	Select winners
	Vendor:	Be a winner

The findings and recommendations of the study will enable both internal "champions" and CASE vendors to make a better "case for CASE:"

- Resources will be allocated more effectively.
- Key decision makers can be more easily convinced of the reasons for making significant CASE investments.

5. DELIVERABLES

Standard Deliverables

Standard deliverables will consist of a five-volume set of reports and a conference at which key findings will be presented. The five volumes are:

I. CASE Use: Needs and Critical Success Factors

- Classification of types of CASE tools. This will go beyond -- and be more useful than -- the traditional "front end", "back end" categories.
- The extent of use of the different types of tools.
- Summaries and analysis of CASE case studies (at least 25 detailed studies will be presented).
- Contrast of pre- and post-CASE systems development experience (quantitative, supplemented by illustrations).
- Analysis of successful and unsuccessful CASE system development experience, based on primary research data.
- Integration of maintenance, redevelopment and development.
- CASE investment: present and future.
- CASE technical benefits; measurement issues.
- Findings and recommendations.

II. CASE Impact on Corporate Strategy

- CASE impact on competitive edge/strategic applications.
- The relationship of CASE (as it exists now) to systems planning; changes already caused by CASE; reasons.
- CASE and current corporate business and strategic planning.
- A map and analysis of the new systems environment created by successful CASE implementations.
- CASE as creating additional opportunities -- or barriers -- to outside suppliers of services.
- CASE and systems integration: the corporate perspective.
- The potential impact of CASE on the corporation: risks and rewards; measurement issues.

- Findings and recommendations.

III. CASE Products: Market Analysis

- Market size -- 1990-1995: Total; by product type; by customer type; changes in market compositions.
- Product gaps; how to fill them.
- Emerging market requirements.
- Top 50 CASE product vendors: size, product characteristics; market penetration; unique positioning; strengths and weaknesses.
- Changing CASE vendor positioning (e.g., mega-vendors, specialists, vanishing); alliances and niches.
- Vendor CASE strategies: IBM; other major organizations; selected others.
- Findings and recommendations.

IV. CASE Impact on the IS Industry

- CASE technology use by other system-building software vendors impact on: DBMS, 4GL, compilers, debuggers, etc. (Classes of vendors; as well as individual vendors, where warranted.)
- CASE technology and operations management software.
- Applications software products -- the differential impact on:
    - Vertical vs. horizontal software;
    - Different vertical industry segments.
- Professional services/systems integrators.
- CASE built-ins: applications software; professional service firms and systems integrators.
- Interactions between CASE product vendors and:
    - Other systems software vendors
    - Software vendors generally
    - Systems integrators
    - Hardware companies.
- Trends.
- Resulting impact on corporate IS customers.
- Findings and recommendations.

V. Future CASE Technology: How Vendors and Corporations Can Exploit It

- Changes in the composition of CASE: Effects on vendors, IS, and corporations generally.
- Changes in methodologies and design technology.
- Impact of Object-Oriented Design and Programming.
- AI-driven CASE.
- The effect of standards (formal, de facto); missing standards.
- Designing and implementing truly distributed applications.
- Maintenance and Re-engineering: Code, design, data.
- Integrated commercial CASE products: 1990, 1992, 1995.
- IBM.
- Assessment of technical directions.
- Recommendations.

Note: Subscribers who sign up for the study before __________ will have the opportunity to review the study's detailed plans and to influences its direction. This includes the opportunity to suggest specific topics and questions for inclusion in the primary research phase.

The results of the study will be presented at a conference for the study's subscribers. The conference will not be separately available to non-subscribers.

Optional Deliverables

Optional deliverables include the following:

- An on-site, tailored presentation of results, including a contrast of the sponsor's operations and strategy to its peers as well as specific recommendations.
- Additional studies/consulting for individual sponsors may be conducted for an additional charge.

6. QUALIFICATIONS

INPUT has long-followed and reported on applications development and productivity issues. In the early 1980s INPUT sponsored a trail-breaking multi-client study on applications development and productivity issues, methods, and tools. This study was followed by a series of in-depth reports, including:

- 4GLs
- Maintenance
- Etc.

[More]

The director of this study is Thomas O'Flaherty, Vice President of INPUT's New Jersey office. Mr. O'Flaherty has conducted over 100 IS-related research and consulting assignments for clients ranging from start-ups to firms such as ADP, Ameritech, AT&T, Citicorp, Continental Insurance, Coopers & Lybrand, General Motors, GTE, IBM, ITT, Marriott Corporation, McKinsey & Co., Metaphor, Mobil, and Unisys.

Mr. O'Flaherty brings a particularly pertinent background to this study:

- In the last year he has consulted to and/or had dialog with over a dozen leading CASE vendors.

- Mr. O'Flaherty has been a guest lecturer at the IBM Software Engineering Institute; in 1989 he made a presentation at CASECON and was a speaker at the executive track of the largest CASE vendor's user conference. He is a member of the New York Metropolitan CASE Users Group.

- Before entering consulting, he had hands-on experience at every IS level, including IS Director.

- He has developed critical and unique systems, including two that added $13 million and $21 million, respectively, to the bottom line.

Mr. O'Flaherty has also made presentations to such groups as:

- National ACM Conference

- Conference on Information Centers and Fourth Generation Languages

- International micro-mainframe communications seminars

- Info/Software

Mr. O'Flaherty has been a regular contributor to the Computerworld Softline column since 1983. He is a member of the ACM, the Society for Management Information Systems, and a founding member of the American Association for Medical Systems and Informatics. He was a member of a professional delegation to China, lecturing on contemporary computing. Mr. O'Flaherty holds a Certificate in Data Processing (CDP).

7. PRICING

A Subscriber to the study will pay $25,000 and receive the following:

- Two copies of each of the five volumes of the study. (For use within the same corporate site only; additional copies will be available for $250each. Special pricing is available for multiple sites.) [Tentative pricing: $10,000 per additional site.]
- Attendance for three persons at the presentation of results. (Additional attendees may attend for a payment of $400 each.)
- An opportunity to submit a list of specific issues to be addressed, as well as an opportunity to review interview protocols and make further suggestions. (This will only be possible for subscribers who sign by __________. Note: INPUT may not find it feasible to incorporate all suggestions into the study.)

While we believe that every subscriber will benefit from using each volume of the study, a few organizations may wish to purchase individual volumes. This may be done under the following terms:

- Each volume will be priced at $6,000.
- Attendance at the conference will cost $2,000 per person for organizations purchasing individual volumes.

A Sponsor of the study will pay a fee of $50,000 and receive the following:

- Six copies of each of the five volumes of the study. (For use at multiple sites within the same corporate entity only; additional copies will be available for $150 each. Special pricing is available for subsidiaries with a separate legal existence.)
- Attendance for an unlimited number of persons at the conference presenting the results of the study.
- An opportunity to submit a list of specific issues to be addressed, as well as an opportunity to review interview protocols and make further suggestions. (This will only be possible for subscribers who sign by __________. Note: INPUT may not find it feasible to incorporate all suggestions into the study.)
- A one-day confidential on-site review of the sponsor's strategy and operations (out of pocket expenses additional).

- An on-site, tailored presentation of results, including a contrast of the sponsor's operations and strategy to its peers, as well as specific recommendations (out of pocket expenses additional).

Additional studies/consulting for individual sponsors can be conducted for an additional charge.

ORDER/INVOICE/FULFILLMENT

Acctg. ONLY

Inv. Comp.	By:	Date:	Client #	Order #	Inv. #	Multi-Invoicing ____ of ____

CUSTOMER/INVOICE TO

ORIGINATOR (Signaure) RL DATE ____

Company Software AG
Name Mr./Ms. JJ Ayo
Position Exec VP
Address 11190 Sunrise Valley Dr
City Reston VA 22091
Province ____
Phone 703-391-675[illegible]

CA Tax Rate ____
CT Tax 8% ____
Salutation ____
State ____
Zip ____
Country ____
Fax ____
Tlx ____

APPROVALS
VP Sales/Res.
Date
Controller
Date

ORDER

Special instructions for invoicing, progress billing, or delayed payments, etc.
Bill for completion of Project $4,000 + expenses
(TOF ~~[illegible]~~ expenses [illegible] 1/22 + Fax, Fed Ex, copying etc.)
* TOF to review

Contract Year Beg. ____
End ____

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DETAIL

Indicate US, UK, FR, VA	Prod. ID/Year	Item Type Code	Item Description or Title	Quantity	Price	Shipped By	Date
US	YSAG	YC					

Fulfillment to be completed in: ☐ Corporate ☐ London ☐ Virginia ☐ France ☐ Other ____

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INPUT

About INPUT

INPUT - COMPANY PROFILE

- Independently owned and operated since 1974

- International scope
  - California
  - New York
  - Washington, D.C.
  - London
  - Paris
  - Tokyo

- Specializes in Information Services

INPUT's INFORMATION DELIVERY METHODS

- Programs
  - Written reports
  - Market forecasts (size, issues)
  - Management presentations
  - Conferences
  - Senior INPUT staff availability
  - Hot line support

- Consulting, e.g.,
  - Targeted market research
  - Product/market evaluation
  - Diversification analysis

- M & A Advisory

INPUT PROGRAMS

- Information Systems Program
- Vendor Analysis Program - U.S.
- Vendor Analysis Program - Europe
- Market Analysis Program - U.S.
- Market Analysis Program - Europe
- Systems Integration Program - U.S.
- Systems Operations Program - U.S.
- Electronic Data Interchange Program
- Federal Information Systems and Service Program

The INPUT Edge

PRIMARY RESEARCH + IN-DEPTH INDUSTRY KNOWLEDGE = STRATEGIC INFORMATION YOU CAN TAKE ACTION ON

- 10,000 interviews annually
- Track 4,000 companies
- 100 consulting studies
- Senior staff with wide experience

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Go \ *IBM Provides Dollars, Algorithms*

Continued from Page 1

be used by "mobile workers" for such tasks as filling out insurance claims or completing sales-call reports.

A host of companies, including Sony Corp., Canon Electronics, Apple Computer Inc. and GRiD Systems Corp., are rushing into the slate-PC market. But IBM's decision to support Go will have a profound impact on what standards are set, analysts said.

"If IBM is going to license, resell or invest in Go, that's a major boost for stylus systems as a category and a real coup for Go," said Richard Shaffer, editor of Technologic Computer Letter, a technology newsletter in New York.

Officials at IBM and Go declined to comment.

Founded in 1988, Go, of Foster City, Calif., now has 70 employees, led by Robert Carr and Jerry Kaplan, former chief scientists at Ashton-Tate and Lotus Development Corp., respectively.

No one will comment on the Go machine for the record. However, sources who have seen the 4-pound PC say that it incorporates an Intel Corp. 286 processor, between 4M and 8M bytes of memory, and proprietary coprocessors that let the machine "read" handwriting.

Today, the Go PC can recognize neatly printed letters and some degree of connected handwriting, sources said. The IBM algorithms may eventually let the machine read cursive handwriting, they added.

"If they can't get [the algorithm] right, they've got an expensive Etch-a-Sketch," said one developer who has seen the machine.

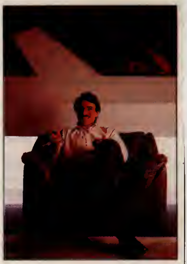
The Go machine, which sources say is being readied for a Comdex/Fall preview, uses a proprietary operating system, but can be hooked to a standard DOS PC to download data, sources said.

Go is currently showing prototypes of its PC to software designers, hoping to drum up application support. Established vendors, however, said they aren't likely to be the first to jump on board, so Go is looking to startups such as Slate Corp., of Scottsdale, Ariz., which develops programs solely for slate-style PCs.

Mitch Kapor, the founder of Lotus and currently chairman of ON Technology Inc. in Cambridge, Mass., is also a financial backer in Go and may write applications for the machine.

"Right now we're a struggling startup, but if we had the resources it would be at the top of our list," Kapor said.

Kapor and others say the market for slate-style PCs will eventually be huge. For now, however, the market is slow—so slow, in fact, that Linus Technologies Inc., the Reston, Va., company that pioneered slate-style PCs, is going out of business. "We sold 400 units from June 1988 to now," CEO Stuart Miller said. "The market has been slow getting itself into gear." ■



Mark Adams

Robert Carr helps in leading Go Corp.'s development effort.

TCF

IBM's SOFTWARE STRATEGY

PRESENTATION TO SOFTWARE AG

January 17, 1990

YSAG

INPUT
Parsippany Place Corporate Center
Suite 201
959 Route 46 East
Parsippany, New Jersey 07054

- OBJECTIVE
- INTRODUCTION
- U.S. SOFTWARE INDUSTRY
- BACKGROUND: IBM'S PRIOR SOFTWARE INITIATIVES
- EMERGING SOFTWARE-RELATED STRATEGIES
- PARTNERING
- SOFTWARE AG ROLE

OBJECTIVE

Bulk!

- Facts and analysis on IBM's position and direction

Facts, Analysis
Interpretation

- Roles of third-parties
  - IBM's expectations
  - Potential roles

Raise issues; we don't have all answers

- Software AG role vis-a-vis IBM
  - Some INPUT recommendations
  - But, based on outsider's knowledge of Software AG's capabilities and plans
  - Software AG should see connections INPUT doesn't
  - More analysis needed

Ask Q
Discussion

INTRODUCTION

Assess Source - More than me

- About INPUT
- Sources and Focus of Analysis

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Vendors } Directions
Mkts }

Not IBM watcher per se

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- Federal Information Systems and Service Program

The INPUT Edge

PRIMARY RESEARCH + IN-DEPTH INDUSTRY KNOWLEDGE =
STRATEGIC INFORMATION YOU CAN TAKE ACTION ON

- 10,000 interviews annually
- Track 4,000 companies
- 100 consulting studies /yr
- Senior staff with wide experience

GENERAL APPROACH

to the pres

- Conclusions, forecasts important
- Reasoning, assumptions, scenarios more important
- Applying different assumptions and scenarios can greatly affect conclusions
- Controversial, challenging if facts to support
- Systems Software flavor

Q

HW Co. - earlier version

Mother - IBM stock

SOURCES AND FOCUS

- **Sources**

  No IBM briefing by John Akers
  Mgt Comm

  - INPUT's primary research
  - IBM public statements
  - IBM "semi-public," "semi-authorized" statements
  - INPUT's non-proprietary knowledge of IBM
  - IBMers' reactions
  - Constant IBM contacts/questions

  Changing
  much more
  open - listen

  Direct, indirect

  4 IBMers - 8 hrs
  10-12 tel contacts

- **Largely interpretive**

- **Largely U.S. focus**
  - Specifically European or Japanese initiatives usually not addressed here
  - U.S. is IBM's core and weakest market

INPUT ANALYSIS TEAM

- Tom O'Flaherty, Vice President, New York
    - 100+ consulting assignments (eight for IBM)
    - Extensive CASE-related background
    - Investment bank
    - Extensive hands-on IS experience

- Peter Cunningham, President
    - Twenty years analyzing information service industry
    - Hundreds of industry contacts annually
    - High level consulting

- Mary Raymond, Manager, Vendor Analysis Program
    - Extensive software analysis at INPUT
    - Information technology securities analyst

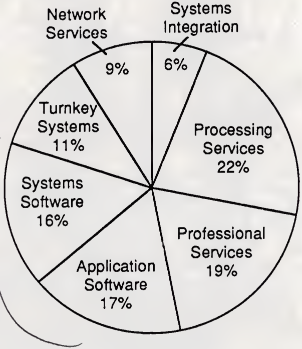
} Not feeling well

- Dennis Wayson, Vice President
    - Extensive high level information services exposure
    - IS management

- Doug Wilder, Director, Systems Integration Program
    - Analyzes changing vendor strategies
    - Former IBM planner (Note: no conflict)

U.S. SOFTWARE INDUSTRY OVERVIEW

Projected Information Services Market By Delivery Mode—1989



1/3

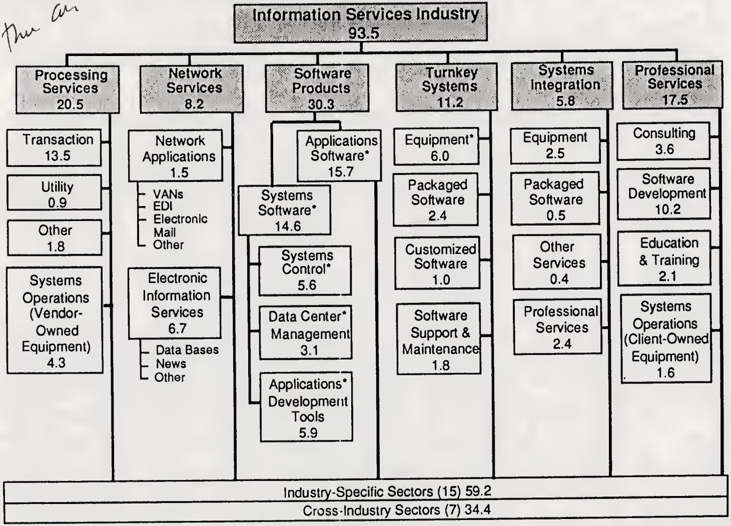
$94 Billion

Set Stage

① iBM Tryin a lot

② Impacts thru an

Information Services Industry Structure—1989
($ Billions)



- **Information Services Industry** 93.5
  - **Processing Services** 20.5
    - Transaction 13.5
    - Utility 0.9
    - Other 1.8
    - Systems Operations (Vendor-Owned Equipment) 4.3
  - **Network Services** 8.2
    - Network Applications 1.5
      - VANs
      - EDI
      - Electronic Mail
      - Other
    - Electronic Information Services 6.7
      - Data Bases
      - News
      - Other
  - **Software Products** 30.3
    - Applications Software* 15.7
    - Systems Software* 14.6
      - Systems Control* 5.6
      - Data Center* Management 3.1
      - Applications* Development Tools 5.9
  - **Turnkey Systems** 11.2
    - Equipment* 6.0
    - Packaged Software 2.4
    - Customized Software 1.0
    - Software Support & Maintenance 1.8
  - **Systems Integration** 5.8
    - Equipment 2.5
    - Packaged Software 0.5
    - Other Services 0.4
    - Professional Services 2.4
  - **Professional Services** 17.5
    - Consulting 3.6
    - Software Development 10.2
    - Education & Training 2.1
    - Systems Operations (Client-Owned Equipment) 1.6

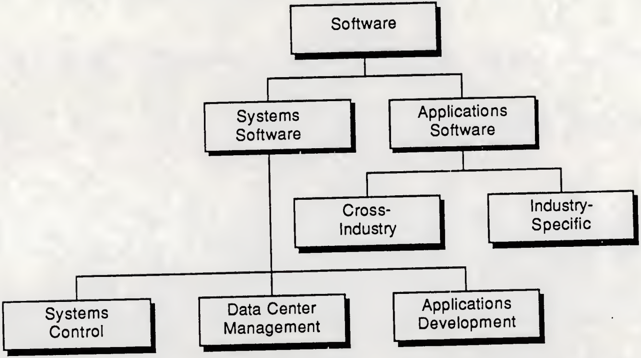
Industry-Specific Sectors (15) 59.2

Cross-Industry Sectors (7) 34.4

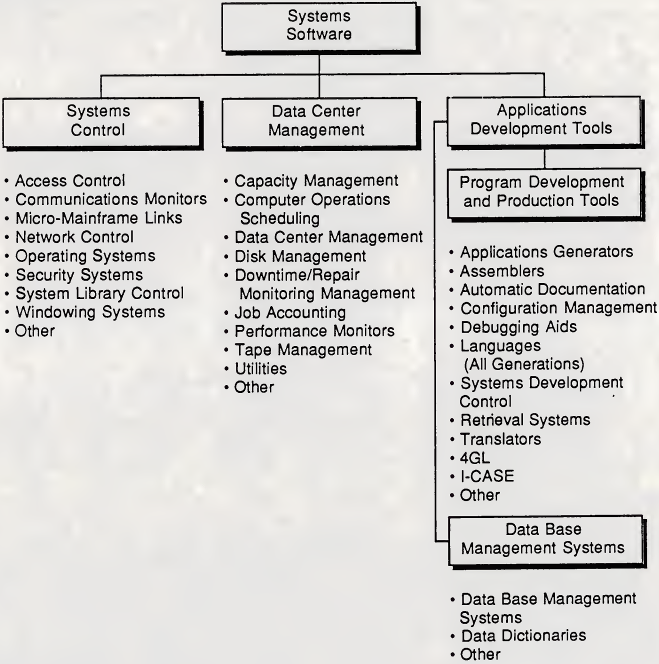
*Broken out by PC/Workstation, Minicomputer, and Mainframe segments

Source: INPUT

Software Products Market Structure



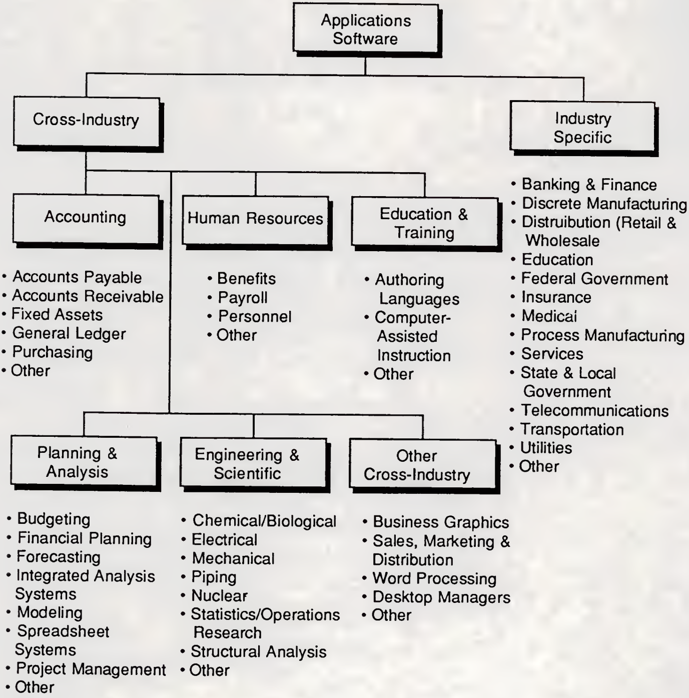
Systems Software Products
Market Structure



Systems Software

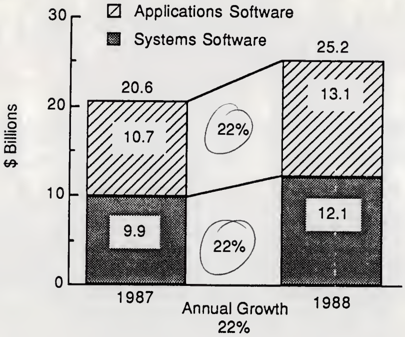
- **Systems Control**
  - Access Control
  - Communications Monitors
  - Micro-Mainframe Links
  - Network Control
  - Operating Systems
  - Security Systems
  - System Library Control
  - Windowing Systems
  - Other
- **Data Center Management**
  - Capacity Management
  - Computer Operations Scheduling
  - Data Center Management
  - Disk Management
  - Downtime/Repair Monitoring Management
  - Job Accounting
  - Performance Monitors
  - Tape Management
  - Utilities
  - Other
- **Applications Development Tools**
  - **Program Development and Production Tools**
    - Applications Generators
    - Assemblers
    - Automatic Documentation
    - Configuration Management
    - Debugging Aids
    - Languages (All Generations)
    - Systems Development Control
    - Retrieval Systems
    - Translators
    - 4GL
    - I-CASE
    - Other
  - **Data Base Management Systems**
    - Data Base Management Systems
    - Data Dictionaries
    - Other

Applications Software Products Market Structure

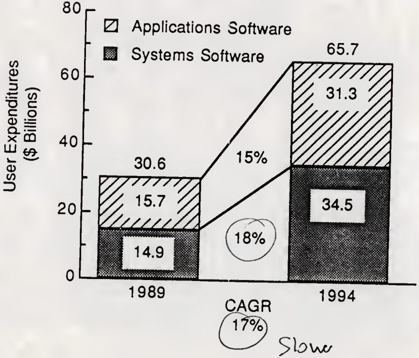


- Applications Software
  - Cross-Industry
    - Accounting
      - Accounts Payable
      - Accounts Receivable
      - Fixed Assets
      - General Ledger
      - Purchasing
      - Other
    - Human Resources
      - Benefits
      - Payroll
      - Personnel
      - Other
    - Education & Training
      - Authoring Languages
      - Computer-Assisted Instruction
      - Other
    - Planning & Analysis
      - Budgeting
      - Financial Planning
      - Forecasting
      - Integrated Analysis Systems
      - Modeling
      - Spreadsheet Systems
      - Project Management
      - Other
    - Engineering & Scientific
      - Chemical/Biological
      - Electrical
      - Mechanical
      - Piping
      - Nuclear
      - Statistics/Operations Research
      - Structural Analysis
      - Other
    - Other Cross-Industry
      - Business Graphics
      - Sales, Marketing & Distribution
      - Word Processing
      - Desktop Managers
      - Other
  - Industry Specific
    - Banking & Finance
    - Discrete Manufacturing
    - Distruibution (Retail & Wholesale
    - Education
    - Federal Government
    - Insurance
    - Medical
    - Process Manufacturing
    - Services
    - State & Local Government
    - Telecommunications
    - Transportation
    - Utilities
    - Other

Software Products Market By Type
1987-1988

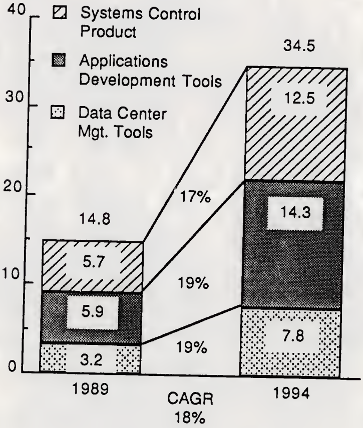


Software Products Expenditures
1989-1994
(Estimated)



Slow

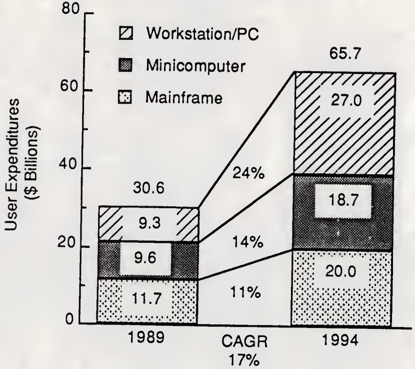
Systems Software Market By Software Type
1989-1994



All

Software Products Market Forecast
1989-1994

By Hardware Platform



User Needs

Drivers

- Application sophistication
- Heterogeneous hardware/environment
- Dynamic connectivity/cooperative processing
- Resource sharing/groupware
- Productivity: user and programming
- Workstation support
- Image processing

IS Vendor

Business Environment

- Increasing scale of competition
- Cross-licensing/alliance building
- Increasing efforts to establish "de-facto" standards
- Increasing number of lawsuits
- Development of software power blocs

SW

Complementary Services

- Consulting
- Education and training
- Software development
- Systems integration
- Software integration
- Customization

BACKGROUND:
IBM'S PRIOR SOFTWARE INITIATIVES

Try to understand IBM's viewpoint

THE LUCKY MISTAKE OF 360 O/S

- Did not meet objectives
- Late, bug-filled, complex
- Three levels of managers fired
- No one understands
- 5,000 maintainers
- But Indispensable foundation of IBM's proprietary position

CONTEXT: IBM'S PLANS CIRCA 1984

- $200 billion company by 1995?
- $35 billion in software revenues by 1995
- Grow with all markets

HW - all platform
SW
Svcs

IBM'S SOFTWARE STRATEGY: CIRCA 1984

- Software as additional growth point
- Build on "ownership" of mainframe operating environment (famous colored concentric circles)
  - Operating systems
  - Communications architecture/SAA
  - DBMS
- IBM PC bonus
- Expand into allied areas
- Optimistic, expansionistic: Related to IBM's overall success 1980-1985
- Still seeing effects of attitude

Reality

IBM SOFTWARE REVENUES
($ billions)

	1988	1987	1986
U.S.	$2.9	$2.8	$2.4
% increase	4%	17%	--
Rest of World	$5.0	$4.0	$3.1
% increase	25%	29%	--
Total	$7.9	$6.8	$5.5
% increase	16%	24%	--
Corporate Revenue	$59.7	$55.3	$52.2
% increase	8%	6%	--

3 yr lag

1995: 35 bill

HW - Mainframe

Source: IBM Annual Report

IBM SOFTWARE REVENUES AS PROPORTION OF CORPORATE REVENUES

	1988	1987	1986
U.S.	11.5%	11.0%	9.2%
Rest of World	14.5%	13.4%	11.6%
Total	13.2%	12.2%	10.5%

Source: IBM Annual Report

IBM MAINFRAME HARDWARE SLOWDOWN: PARTIAL EXPLANATIONS

- **PCs**
- **Budget constraints**
- **Minis (DEC)**

Lg Cust: →

- Slowing
- M+A
- Consol. Data Center

SOFTWARE'S ROLE IN REVENUE SLOWDOWN

- "Software" mostly captive operating system-related revenue. Revenue increase from:
  - Price increases (explicit, disguised)
  - Improved functionality

- Realization that price increases add to cost of ownership: ↗ Hardware Maintenance rollbacks

- Main limit: growth in processors - essentially stable

- Software "strategy" mid-80s
  - Fuzzy, inward-looking
  - Lost track of customer needs

SW

MID-1980s STRATEGY

DESIGNED TO SOLVE PERCEIVED PROBLEMS OF EARLY 1980s

- Product-oriented strategy

- SAA
  - Unify disparate platforms
  - Solve DEC problem
  - Decommoditize the PC

- DB2
  - Reclaim DBMS segment
  - Technologic leadership
  - Give customers access to locked up data (decision support)
  - Chew up cycles

SAA ORIGINAL CONCEPT: COMMON INTERFACES

- Inward looking
  - Repair platform incompatibilities
  - Program product inconsistencies

- Few immediate customer benefits
  - Critical mass of conforming products needed before benefits become apparent
  - Transitional retraining, relearning

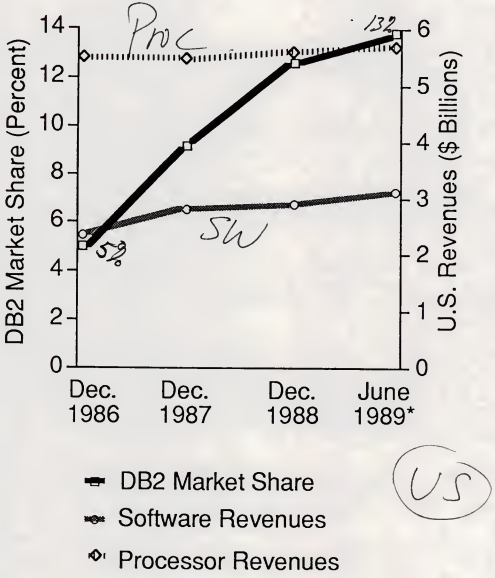
- Significant burden on third-party software vendors (witness IBM's investment in MSA, AMS, PMS)

  - Work
  - Audits

- Equally large burden on IBM

- Real SAA need and benefit: Distributed applications. But,
  - Distributed, tiered DBMS still many years away
  - Distributed design methodologies nearly non-existent
  - Customer understanding, need very unclear

DB2: Empty Triumph?



* Annualized

Sources: INPUT analysis of Computer Intelligence data; Annual Reports

DB2

- Technically interesting
- Relational band wagon
- Regained market share leadership
- Shot to top of installed base
- But undermined ability of IBM's core customers to develop large new systems

DB2: FLAWED STRATEGY, SERIOUS EFFECTS

- **DB2 failings as a development engine**
  - **Underpowered (severely so until recently)**
  - **Few tools (now being remedied, largely by third parties)**
  - **No design methodology to replace the largely intuitive ones used with earlier DBMSs**
  - **Failings recognized by IBM: dual DBMS strategy initially**

Knew how to build - unscientific

- **Effect: Endless pilots and experimentation**
  - **Unfashionable to develop new applications using "obsolete" DBMS**
  - **Crippled a whole class of "competitors"**

- **These "competitors" (e.g., Cullinet, ADR, CCA) had helped to develop the large, new applications that traditionally fueled mainframe hardware growth.**

APPLICATIONS DEVELOPMENT SLOWDOWN: OTHER FACTORS

- Maintenance
- Difficulty in making strategic applications out of business strategy
- Lack of methodology
- Tired blood

IS (IBM ??)

Reality =

SAA/DB2 DID NOT ADDRESS IBM'S ACTUAL PROBLEMS OF LATE 1980s

- IBM's Ownership of mainframe environment - increased
  - As much a drag as an opportunity
  - Mid-range growing 2-1/2 times faster (per IBM)
- No coherent answer to DEC, et al
- No credible workstation (standalone or networked)
- "Ownership" of PC slipped out of IBM's hands: From 1983-1988 competed as a commodity

PERVERSE EFFECTS
OF IBM'S MID-1980s SOFTWARE INITIATIVES

- **Little return on SAA investment during 1980s**

- **DB2 weakened IBM's natural allies** Provocative
  - **IS managers:**
    Fools for developing Cullinet (or IMS) applications

Not conscious fortunately

  - **Other DBMS/Application Development Tool vendors:**
    No longer an acceptable (or even safe) alternative
  - **Application Software vendors:**
    Perceived as having obsolete products

reinforced →

- **No help from microsoftware**
  - **IBM never controlled DOS**
  - **Unsuccessful me-too retail strategy**
  - **Fewer and fewer compelling reasons to buy PCs from IBM**

⟹

SLOWDOWN IN NEW APPLICATIONS DEVELOPMENT

Mult sources

- **Well-known increase in IS resources devoted to maintenance (50-75%, depending on definition and company)**
  - **Fewer opportunities for totally new applications**
  - **Reactive maintenance: Slower and more complex**
  - **Redevelopment-in-place**

- **New development of complex system**
  - **Typical life cycle:**
    three to five years (and, if anything, lengthening)
  - **Business problems/opportunities are moving faster** *

- **Loss of confidence in IS by corporate management (65% in recent survey)** Cause/effect
  - **Treadmill: Rising IS expenditures to keep in place**
  - **Turnover in CIOs**
  - **New focus on outsourcing**

TOP used to be

CIO VIEW OF THE WORLD

Criteria	Measurement	Comments
No surprises	Hard	Overriding survival criteria
Broad objectives	Soft	Technology/business integration
Enterprise planning	Soft	Participation and/or leadership
Technology strategy	Hard	Plan exists/process works
Technology strategy	Soft	Plan is effective
Systems develoment	Hard	Cost/Schedule/performance
Systems operations	Hard	Cost/service level/availability

Appl

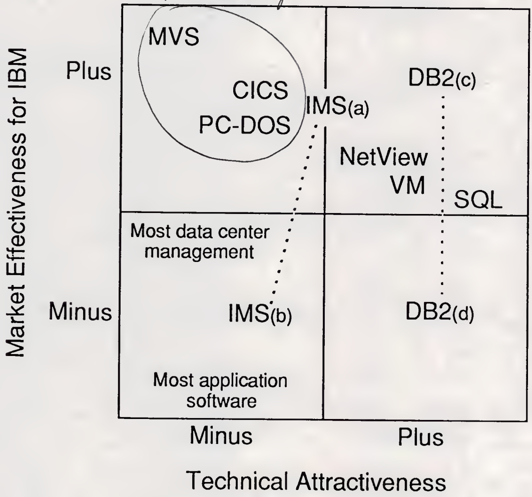
Source: IS Management in the Year 2000 (INPUT/Andersen Consulting)

"Summary"

IBM Software Products: Technical Attractiveness versus Market Effectiveness

Examples

there ~~first~~ early



Market Effectiveness for IBM

Plus

Minus

MVS

CICS

PC-DOS

IMS(a)

DB2(c)

NetView

VM

SQL

Most data center management

IMS(b)

DB2(d)

Most application software

Minus

Plus

Technical Attractiveness

Notes: (a) 1970s
(b) 1980s
(c) as a product
(d) as an overall contributor

PRIOR SOFTWARE INITIATIVES: CONCLUSION

No flash?

- Ended decade about where started:
  Dependent on operating systems
- Product initiatives (prior page)
- Growing understanding that software has a key supporting role

Thought they knew – Now know they don't

IBM'S EMERGING SOFTWARE-RELATED STRATEGIES

Change

Experimentation

Yr of Cust

SHORT-TERM OBJECTIVE (1-3 years): CUSTOMER NEEDS

- Help customers in whatever way to upgrade or build new applications
    - IBM help
    - Third-party help (another strand in alliance-building)

- Implicit 370 focus
    - Biggest chunk of revenues; biggest problems
    - SAA-OS/2 strategy
        - Too far away
        - Unproven
        - Size of opportunity unclear
        - Even if success, may not be defendable
    - AS/400: Stands or falls on own merits

- Recognition that IBM is a hardware company (degree of conscious recognition varies)

BUILDING IMMEDIATE APPLICATIONS: "YOUR PLACE OR OURS"

Appl Sol Div

- Applications packages
  - Standard
  - SAA-compliant
- Custom (immediate)
  - SI
  - Professional services
- Customizable applications packages

LONGER TERM OBJECTIVES

- Rebuild proprietary hardware position
  - SAA (redefined)
  - OS/2

- Make cooperative/distributed processing an everyday reality. Issues:
  - Feasibility
  - Compatibility
  - Design methodologies
  - Business applications
  - Education

long term

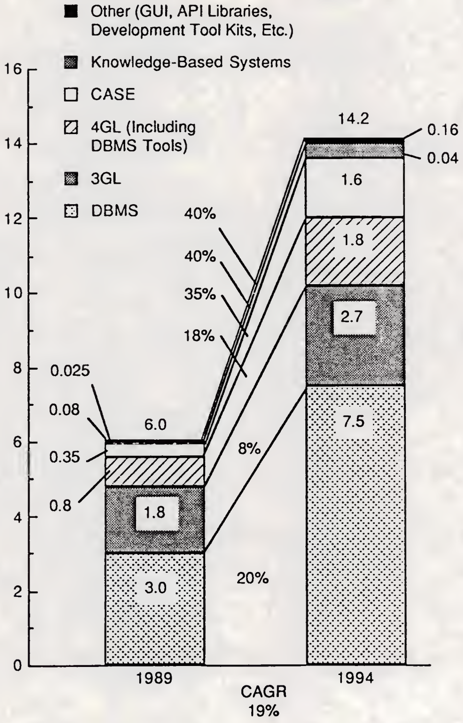
- Image processing (as applications component)

- AI (as enabler)

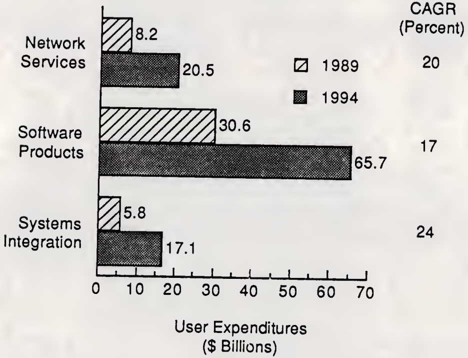
BUILDING FUTURE APPLICATIONS

- AD/Cycle: 1 - 2 years
- Customizable applications packages (2 - 3 years)
  - By software vendor
  - By third-party
  - By customer
- "Rebuilding (2 - 4 years)

Application Development Tool Market
1989-1994
($ Billions)



User Expenditures Information Services
By Delivery Mode
1989-1994



"EXPANDED" SAA

- Application development services
- Repository
- "Distributed" data bases
- Multiple, coordinated platforms (MVS, AS/400, PS/2)
- Shift from internal to external focus: Application enabling key

AD/Cycle →

AD/CYCLE OBJECTIVES

Interpretation

- Primary (non-compromisable)
  - Accelerate system implementation
  - Sell more (IBM) hardware

- Secondary (compromisable)
  - Lock up more of systems software market
  - Increase IBM software product sales
  - Close links to "interesting" technology

AD/CYCLE STRATEGY

- **Market-driven: development**
- **Technology-driven: necessary** for getting job done - not end to itself (vs DB2)
- **IBM-driven: standards**
- **Impact** (Hope) (another pres)
    - **Remove customer risk from CASE vendor selection**
    - **Develop new systems faster and more correctly**
    - **Significantly improve maintenance**

Airline seats
Telephone

AD/CYCLE: CRITICAL COMPONENTS

Component	Focus
Host repository	Control
"Cached out" to programming workstation	Power
Design model: * entity/relationship and object-oriented	Standards (critical)

CROSS-SYSTEM PRODUCT UPGRADE

- Interface to front-end tools

Dual Strat

- COBOL and IMS generation
- Rule-based, AI optimized COBOL (after 6/90)

KNOWLEDGE-BASED GENERATOR

- Not officially announced; 1991?
- "Expert-based" environment
  (Intellicorp; KnowledgeTool; Transform Logic)
- Design to CSP to New Code
- Old Code to CSP to Design
- Design to Code
- Code to Design

AD/CYCLE STRENGTHS AND WEAKNESSES

- Strengths
  - Standards
  - Allowance for multiple implementations
  - Follow-on

- Weaknesses
  - Unproven
  - Lengthy roll-out
  - * "Religion"
  - * Concept could "by-pass" IBM platform as a target

AD/CYCLE: "LAYERED" PARTNERS

- Forty "Development Associate" vendors
  - Fairly open club
  - Attain critical mass for IBM
  - Advance briefing on repository and developing interfaces

- "Close Vendor-Partners"
  - Equity investment partner
  - Deeper, earlier look
  - Defined two-way flow of information
  - Uniform standards
    (especially, "EROO" - Entity Relationship, Object-Oriented)
  - Offerings presented to customers as part of AD/Cycle

Index
Bachman
KnowledgeWare

CLOSE VENDOR PARTNERS (AD/CYCLE)

- **Well managed, financially strong**
- **Overlapping choice of products/approaches**
- **Near term: critical to IBM success**
- **Longer term: ? ? ?** → more later

CSP Dual

CAN A SOFTWARE VENDOR AVOID AD/CYCLE?

- Would IBM have endorsed AD/Cycle if introduced by another (neutral) vendor:
  - In short run, yes
    - Break applications logjam
    - Sell more hardware
  - Analogy to Microsoft

- In longer run: IBM has learned from MS-DOS
  - Critical software is interdependent with hardware platform: in general and, especially, for a hardware vendor
  - An independent application generator is far more of a strategic threat than UNIX, because of platform retargetability

DBMS: AN APPLICATION DEVELOPMENT FOUNDATION

- No longer an end in itself
- Reality of DB2, IMS (committed to)
- Related standards
  - Short-term: AD/Cycle (some flexibility)
  - Long-term: SAA (little flexibility)

Summit - Builtin DB2 (AS/400)
High priority 5 yrs ago
Now = hindrance ??

PACKAGED APPLICATIONS

- "SAA" conforming = ultimately, AD/Cycle-based

- Customizable by
  - Applications software vendor
  - Independent professional service firm
  - IBM
  - Customer

- SI as a logical superset

DATA BASE ENGINES

- AD/Cycle not necessarily tied to a particular DBMS for technical reasons
  - Bachman work
  - Other AI-like tools (Transform Logic, Language Technology)

- Business factors
  - Commitment to IBM platforms critical
  - Filling in performance niches

- Holes between IMS and DB2

4GLS

- IBM currently has little commitment to any particular 4GL (internal/external)

- Issue: Role of 4GL in AD/Cycle
  - Immediate role: Possible input to repository
  - Future role cloudy
    - Possible object-oriented front end to 4GL
    - But, similar front ends going directly to repository

APPLICATION DEVELOPMENT GAPS?

- Data base engines
- 4GL
- Customizable package: strategy and implementation

SOFTWARE CONTRIBUTION TO DISTRIBUTED STRATEGY (LONG TERM)

- Distributed Data Bases: 1995 ? ?
- Application Development Methodology:
  Analogous to real time development methodologies?

SUMMARY

- Customer needs = Application Development (IBM need)
  - Packaged software
  - In-house development
  - Professional services

- SAA-AD/Cycle
  - Standards/Correctness
  - Control
  - Speed

- CSP AI-driven "wild card"
  - Re-engineering
  - By-pass code generators

PARTNERING

PARTNERING

- General background/objectives
- Analysis of partnering arrangements
- Implications

PARTNERING MOTIVATIONS: TARGETED

- Structural
  - Additional marketing channels
  - More competitive cost structure (especially for professional services)

burden of no-layoffs

- Product
  - Fill product gaps (e.g., AIX, PC)
  - Support SAA development (generally, an additive factor)

not specific

- Applications development support
  - Applications development tools/methodologies (CASE)
  - Applications solutions (e.g., packages, professional services)

PARTNERING MOTIVATIONS: GENERAL

- "Learning"
  - Entrepreneurial mind
  - Specific markets
  - Technology
  - Ways of doing business

without killing off

- "Defensive"
  - Hardware enemies (e.g., Japanese)
  - Enemies of enemies (e.g., EDS competitors)
  - Keep strategic companies independent (help growth, block inappropriate takeovers)

CTG

PARTNERING: PROCESS

- Conceptual approval, overall review: Management Committee

- Application Solution Division:
  Monitoring, Coordination (dozen people)

- Opportunities identified, deal struck in product/marketing groups, e.g.,
  - Applications Products Division
  - Desktop Software Group
  - SI Division

MINORITY INVESTMENTS: COMPONENTS

- Price/percent of equity
- Technology transfer/support
- Marketing
- "Governance" eg Board Seat

IBM EQUITY ALLIANCES: APPLICATIONS DEVELOPMENT

CASE Tools	Applications Software	Professional Services
Bachman	AMS Bank	AMS
KnowledgeWare	Baxter Health	CTG
Index	Cadam Mfg	PMS
Transform Logic	MSA (now D&B) Acct	
(one-way technology transfer)	PMS Ins	

Imagination

Little imagination

EQUITY INVESTMENTS: MOTIVATIONS

Mult

Motivations	AMS	Bachman	Baxter	CADAM	CTG
Structural					
• Channels	X				X
• Cost	X				X
Product					
• Gaps					
• SAA	X				
Applications					
• CASE		X			
• Solutions	X		X	X	X
Learning		X			
Defensive		X			X

EQUITY INVESTMENTS: MOTIVATIONS (Con't)

Motivations	Geog. Info.	Image Bus.	Index	I/NET	Inter. Images
Structural					
• Channels			X		
• Cost					
Product					
• Gaps		AIX		AS/400 Imaging	PC Graphics
• SAA					
Applications					
• CASE			X		
• Solutions	X	↓		↓	↓
Learning	X	X		X	X
Defensive					

EQUITY INVESTMENTS: MOTIVATIONS (Con't.)

Motivations	Jensen Jones	KnowledgeWare	Metaphor	MSA	PCO
Structural					
• Channels					
• Cost					
Product					
• Gaps	OS/2 Prod.		Interface		Op. Comm.
• SAA				X	
Applications					
• CASE		X			
• Solutions	X		X	X	
Learning		X	X		X
Defensive				X	

EQUITY INVESTMENTS: MOTIVATIONS (Con't.)

Motivations	PMS	Polygen	Pub. Sol.	Transarc
Structural				
• Channels	X			
• Cost	X			
Product				
• Gaps		Graphics	OS/2 Graphics	AIX Netw.
• SAA	X			
Applications				
• CASE				
• Solutions	X	X		
Learning		X	X	X
Defensive				

NON-EQUITY ARRANGEMENTS:
DEVELOPMENT, PRODUCT/TECHNOLOGY PURCHASES

Why

- Less important to lock up product
- Tangential to primary thrusts
- Priorities
- IBM unit style
- Couldn't make deal

Many of these →

NETVIEW ENHANCEMENTS:
EXAMPLE OF NON-EQUITY ARRANGEMENTS

Company	Product	Relationship
Applied Computing Devices	AIX version of UNIX product	Development contract
Carl Vanderbeek Associates	NetView applications generator	Reseller
International Telemanagement	AIX-based workstation	Co-development
TSB International	OS/2 version of HubView	Co-development
U.S. West	NetCenter Product	Bought product rights (non-exclusive)

Why

IBM's 1989 MOVE TO EQUITY-BASED ALLIANCES

- Earlier positive experiences
  - European, Japanese alliances (30-40)
  - Metaphor
- Key executive transfer from IBM Japan
- Motivations
  - Long term relationship
  - Influence investee
  - Technology sharing (varies by area)
  - Influence continued independence of investee
  - Avoid repeat of Intel and Rolm experiences

IBM STRATEGY FOR IBM/THIRD-PARTY ROLES IN APPLICATIONS DEVELOPMENT

Product Service Supplier	Tools for In-House Development	Application Software Products		Services		
		Packaged	Semi-Custom	Prof. Svc.	Systems Integration	Systems Operations
IBM						
1990	H	L	L	L/M	L?/M	M
1995	H	L	L	L/M	L?/M	M
Third-Parties						
1990	H	H	no tech L/M	M/H	M/H	M
1995	M	H	H	H	M/H	M

cost/spec

Key:

H = High priority (in IBM's strategy)

M = Medium priority (in IBM's strategy)

L = Low priority (in IBM's strategy)

Source: INPUT assessment

SW

IBM ATTITUDE TOWARD THIRD-PARTY SUPPLIERS

IBM Attitude Toward	1985	1990	1995
Operating System Suppliers	--	- -	--
Operations Mgmt. Software	o	o	o
Communications Software	--	-	o (S-Y) - (S-N)
DBMS Software	--	too late o	o (S-Y) - (S-N)
Standalone Program Development Software (CASE)	o	++ (A-Y) o (A-N)	+ (A-Y) -- (A-N)
Integrated CASE Tools	n/a	++ (A-Y) - (A-N)	o (A-Y) -- (A-N)
Decision Support Software	o	+	+
Applications Packages	+	++	++ (S-Y) o (S-N)

Key:

-- = very negative
- = negative
o = neutral
+ = positive
++ = very positive

S-Y = SAA Conforming
S-N = SAA Non-Conforming
A-Y = AD/Cycle Compatible
A-N = AD/Cycle Non-Compatible

Source: INPUT analysis

UNRESOLVED ISSUES

- How to deal with changes in minority partner strategic direction (if in an unwelcome direction)
- Smother small company?
- Interference with management?
- Competition vs. cooperation

Software AG Role vis-a-vis IBM
(Discussion)

FACTORS TO CONSIDER IN POTENTIAL RELATIONSHIP OF SOFTWARE AG AND IBM

Roles

- Competitor
- Implicit partner
- Explicit partner

Time Period

- Immediate
- 3-5 years
- Long term

Opportunity

- Rewards
- Risks

ROLE: COMPETITOR (EXAMPLES)

- Alternative development environment:
  Multiple hardware vendor targets
  platform

- Alternative Entity-Relationship implementation:
  Competing (better) standard

- High risk, ? reward

ROLE: IMPLICIT PARTNER

- Offer?
  - NATURAL tie to AD/Cycle
  - Utilize grammar of AD/Cycle for independently-offered development environment

- Benefit to Software AG?

- Benefit to IBM?

ROLE: EXPLICIT PARTNER

- Offer? E.g.,
  - 4GL technology
  - Transaction DBMS
- Benefit to Software AG?
- Benefit to IBM?